

What is Claimed is:

1. A method for producing a fatty acid alkyl ester composition using fats and oils containing a fatty acid glyceride and/or fatty acid, wherein alcohol and/or water is allowed to co-exist with said fats and oils and the reaction is conducted under conditions of a temperature of 100°C to 370°C and a pressure of 1 to 100 MPa.

2. The method for producing a fatty acid alkyl ester composition according to Claim 1, comprising a process of allowing alcohol and water to co-exist with said fats and oils containing at least a fatty acid glyceride and conducting the reaction under conditions of a temperature of 100°C to 370°C and a pressure of 5 to 100 MPa, to convert the fatty acid glyceride and fatty acid contained in said fats and oils into a fatty acid alkyl ester.

3. The method for producing a fatty acid alkyl ester composition according to Claim 1, comprising a first process of allowing water to co-exist with said fats and oils containing at least a fatty acid glyceride and conducting the reaction under conditions of a temperature of 100°C to 370°C and a pressure of 1 to 100 MPa, to convert the fatty acid glyceride contained in said fats and oils into a fatty acid, and a second process of adding alcohol to the product from said first process and

conducting the reaction under conditions of a temperature of 100°C to 370°C and a pressure of 5 to 100 MPa, to convert the fatty acid contained in the product from the first process into a fatty acid alkyl ester.

4. The method for producing a fatty acid alkyl ester composition according to Claim 1, comprising a process of allowing alcohol to co-exist with said fats and oils containing no fatty acid glyceride and conducting the reaction under conditions of a temperature of 100°C to 370°C and a pressure of 5 to 100 MPa, to convert the fatty acid contained in said fats and oils into a fatty acid alkyl ester.

5. The method for producing a fatty acid alkyl ester composition according to any of Claims 1 to 4, wherein the amount of water is 3 to 1000 mol and the amount of alcohol is 3 to 1000 mol per mol of the fatty acid glyceride contained in said fats and oils, and the amount of alcohol is 1 to 330 mol per mol of the fatty acid contained in said fats and oils.

6. The method for producing a fatty acid alkyl ester composition according to Claim 5, wherein the amount of water is 30 to 400 mol and the amount of alcohol is 30 to 400 mol per mol of the fatty acid glyceride contained in said fats and oils, and the amount of alcohol is 10 to 130 mol per mol of the fatty acid contained in said fats and oils.

7. The method for producing a fatty acid alkyl ester composition according to any of Claims 1 to 6, using alcohol having 1 to 10 carbon atoms as said alcohol.

8. The method for producing a fatty acid alkyl ester composition according to any of Claims 1 to 7, wherein said fatty acid alkyl ester composition is used as a diesel fuel oil.